as the rearward portion of the same piece.

The above described preferred embodiments are intended to illustrate the principles of the invention, but not to limit its scope. Other embodiments and variations to this preferred embodiment will be apparent to those skilled in the art and may be made without departing from the spirit and scope of the invention as defined in the following claims.

I CLAIM:

1. A device for applying non-penetrating clips to small blood vessels or other wound sites or tissue separation sites where suturing or other wound closure techniques would be impossible or undesirable, comprising:

a hand-held clip applier, including:

a handle suitable for gripping in the hand of a surgeon,

a clip storing and dispensing stem extending from a forward end of the handle, the stem having a tip at a remote end, the tip including means for dispensing and serially applying metal clips in non-penetrating engaging configuration against sections of tissue on either side of a wound or tissue separation to clamp the two sections of tissue together, upon the receipt of mechanical force to a clip-applying component of the stem,

a movable member within the handle which, when caused to move by a force applied from outside the handle, is effective to cause movement of the clip-applying component in the stem so as to cause dispensing and application of a clip, and

linkage means engaged with the movable member within the handle and extending to a position in the handle capable of receiving a pushing force from the exterior of the

handle, and

a flexible cable release device comprising a cable sheath, and an internal cable capable of delivering a compressive pushing force through the sheath, a thumb button at a remote hand-grippable end of the cable release, for applying a pushing force to slide the cable through sheath so as to cause extension of a pusher tailpiece out of a proximal end of the cable sheath when the thumb button is pushed inward toward the sheath by a finger or thumb, the sheath at the proximal end having means for connection to the handle of the hand-held clip applier in a position to apply force to the linkage means in the handle by motion of the pusher tailpiece, thus advancing the linkage means and movable member within the handle, and thus advancing the clip-applying component to dispense and apply a clip when the thumb button on the flexible cable release device is pushed,

whereby with the cable release device connected to the clip applier the hand-held clip applier can be held very steadily in one hand with its tip under the microscope while the force to apply a clip is supplied at the remote end of the cable release device, avoiding any movement of the tip at the instant of clip application.

2. The device of claim 1, wherein the handle is round so as to be capable of comfortable hand gripping in any rotational

orientation.

8. A device for applying non-penetrating clips to blood vessels or other wound sites or tissue separation sites where suturing or other wound closure techniques would be impossible or undesirable, comprising:

a hand-held clip applier, including:

a handle suitable for gripping in the hand of a surgeon,

a clip storing and dispensing stem extending from a forward end of the handle, the stem having a tip at a remote end, the tip including means for dispensing and serially applying metal clips in non-penetrating engaging configuration against sections of tissue on either side of a wound or tissue separation to clamp the two sections of tissue together, upon the receipt of force to a clip-applying component of the stem,

a movable member within the handle which, when caused to move by a force applied from outside the handle, is effective to cause movement of the clip-applying component in the stem so as to cause dispensing and application of a clip, and

linkage means adjacent to the movable member within the handle and extending to a position in the handle capable of

receiving a pushing force from the exterior of the handle, and

a flexible remote force-transmitting device comprising a tubular sheath, and an internal movable medium capable of delivering a compressive pushing force through the tubular sheath, a depressible actuator at a remote end of the flexible device, for applying a pushing force to slide the movable medium through the sheath so as to cause extension of a pusher tailpiece out of a proximal end of the tubular sheath when the actuator is depressed, the sheath at the proximal end being connected to the handle of the hand-held clip applier in a position to apply force to the linkage means in the handle by motion of the pusher tailpiece, thus advancing the linkage means and movable member within the handle, and thus advancing the clip-applying component to dispense and apply a clip when the actuator on the flexible force-transmitting device is depressed,

whereby with the remote flexible force-transmitting device connected to the clip applier the hand-held clip applier can be held very steadily in one hand, and can be gripped at any location desired along the length of the handle, while the force to apply a clip is supplied at the remote end of the flexible device, avoiding any movement of the tip at the instant of clip application.

4. The device of claim 3, wherein the remote flexible force-transmitting device has a threaded fitting at its proximal end, the tail end of the handle of the clip applier having a mating thread so that the flexible device is removable from the clip applier.

5. The device of claim 4, wherein the flexible force-transmitting device comprises a cable release device, said movable medium comprising an internal cable in the tubular sheath and the depressible actuator comprising a thumb button.

6. The device of claim 3, wherein the remote flexible force-transmitting device comprises a hydraulic line containing liquid as said movable medium, and wherein the remote end of the flexible device has a piston and cylinder connected to put pressure on the liquid when the actuator is depressed, to force the liquid through the hydraulic tube, and said proximal end of the flexible device having a second piston and cylinder with the piston connected to said pusher tail piece, so that the linkage means and movable member are pushed forward hydraulically when the actuator is depressed.

7. The device of claim 6, wherein the depressible actuator comprises a thumb button connected to the piston at the remote

end of the flexible device.

8. The device of claim 3, wherein the handle is round so as to be capable of comfortable hand gripping in any rotational orientation.

9. A method for applying non-penetrating surgical clips to blood vessels or other wound sites or tissue separation sites where suturing or other wound closure techniques would be difficult, awkward or undesirable, comprising:

providing a hand-held clip applier which includes:

a handle suitable for gripping in the hand of a surgeon,

a clip storing and dispensing stem extending from a forward end of the handle, the stem having a tip at a remote end, the tip including means for dispensing and serially applying metal clips in non-penetrating engaging configuration against sections of tissue on either side of a wound or tissue separation to clamp the two sections of tissue together, upon the receipt of force to a clip-applying component of the stem,

a movable member within the handle which, when caused to move by a force applied from outside the handle, is effective to cause movement of the clip-applying component

in the stem so as to cause dispensing and application of a clip, and

linkage means adjacent to the movable member within the handle and extending to a position in the handle capable of receiving a pushing force from the exterior of the handle, and

providing a flexible remote force-transmitting device connected to the handle of the clip applier, the cable release device comprising a tubular sheath, and an internal movable medium capable of delivering a compressive pushing force through the tubular sheath, a depressible actuator at a remote end of the flexible device, for applying a pushing force to slide the movable medium through the sheath so as to cause extension of a pusher tailpiece out of a proximal end of the tubular sheath when the actuator is depressed, the sheath at the proximal end being connected to the handle of the hand-held clip applier in a position to apply force to the linkage means in the handle by motion of the pusher tailpiece, thus advancing the linkage means and movable member within the handle, and thus advancing the clip-applying component to dispense and apply a clip when the actuator on the flexible force-transmitting device is depressed,

positioning the tip of the clip applier in an appropriate position to connect tissue, and

effecting dispensing and application of a clip at the site

to be closed by depressing the actuator at the distal end of the flexible device, the depressing of the actuator not being performed by the hand holding the handle of the clip applier.

10. The method of claim 9, wherein the actuator is depressed by a person other than the person holding the handle of the clip applier.

11. The method of claim 9, wherein the actuator comprises a foot pedal and is depressed by the person holding the clip applier.